Amendments to the Claims:

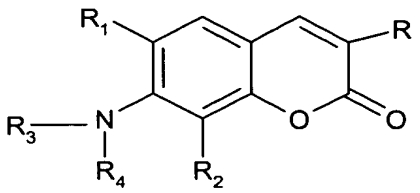
This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Canceled)

3. (Currently amended) A compound of the formula **[[I]]**

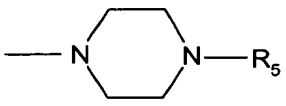


I

~~wherein~~ in which

~~either~~ R_1 and R_2 are both hydrogen; ~~and either R_3 and R_4, independently, are H, CH_3, $^{11}CH_3$, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$, n being 2, 3 or 4,~~ ~~or~~

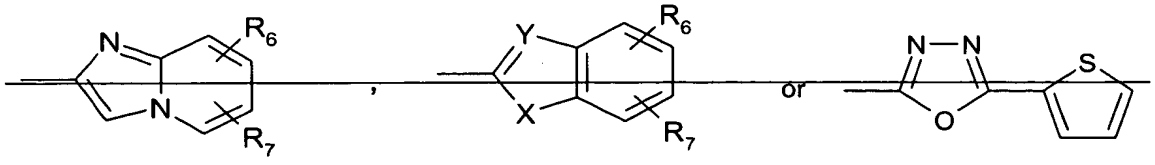
R_3 and R_4, together with the nitrogen atom to which they are attached, form a group of the formula

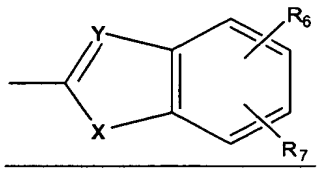


~~wherein~~ in which R_5 is **[[H]]** hydrogen, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, CH_3, $^{11}CH_3$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$, n being ~~as defined above,~~ 2, 3, or 4;

~~or one of R_1 and R_2 is hydrogen and the other, together with R_3, forms a $(CH_2)_m$-bridge, m being 2 or 3, and R_4 is H, CH_3, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $^{11}CH_3$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$,~~ and

R is a group of the formula





~~wherein~~ in which X is [[O,]] S ~~or NR_8, R_8 being H, CH_3, $^{11}CH_3$, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$ (n being as defined above)~~, Y is ~~CH or~~ N, and R_6 and R_7, independently, are [[H]] hydrogen, NO_2, F, ^{18}F, $O(CH_2)_nF$, $O(CH_2)_n{}^{18}F$, Cl, CN, ^{11}CN, OCH_3, $O^{11}CH_3$, I, ^{123}I, $O(CH_2)_nI$ or $O(CH_2)_n{}^{123}I$ ~~(n being as defined above)~~, n being 2, 3, or 4;

~~with the exception of~~

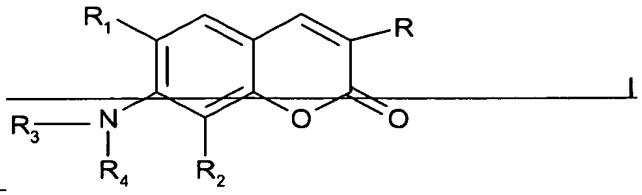
~~7-Dimethylamino-3-(1-methyl-1H-benzoimidazol-2-yl)-chromen-2-one~~
~~3-(1H-Benzoimidazol-2-yl)-7-dimethylamino-chromen-2-one~~
~~3-(6-Chloro-benzothiazol-2-yl)-7-dimethylamino-chromen-2-one~~
~~3-Benzothiazol-2-yl-7-dimethylamino-chromen-2-one~~
~~3-Benzooxazol-2-yl-7-dimethylamino-chromen-2-one~~
~~3-Benzooxazol-2-yl-7-methylamino-chromen-2-one~~
~~3-(5-Chloro-benzooxazol-2-yl)-7-dimethylamino-chromen-2-one~~
~~7-Amino-3-(1H-benzoimidazol-2-yl)-chromen-2-one~~
~~3-Benzothiazol-2-yl-7-dimethylamino-6-methyl-chromen-2-one~~
~~7-Dimethylamino-3-(1-ethyl-1H-benzoimidazol-2-yl)-chromen-2-one~~
~~7-Dimethylamino-3-(6-methoxy-benzothiazol-2-yl-chromen-2-one~~

in free base form or in acid addition salt form.

4. (Currently amended) The compound according to claim 3 of the formula I, which is 3-benzothiazol-2-yl-7-[4-(2-fluoro-ethyl)-piperazin-1-yl]-chromen-2-one, in free base form or in acid addition salt form.

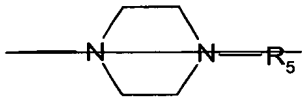
5. (Currently amended) A composition for labeling histopathological structures in vitro or in vivo, comprising a compound as defined in claim 3 of the formula I, in free base form

or in acid addition salt form.



~~wherein~~

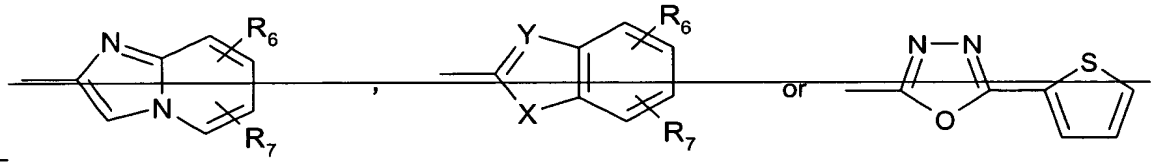
~~either R_1 and R_2 are both hydrogen and either R_3 and R_4, independently, are H, CH_3, $^{11}CH_3$, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$, n being 2, 3 or 4, or R_3 and R_4, together with the nitrogen atom to which they are attached, form a group of formula~~



~~wherein R_5 is H, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, CH_3, $^{11}CH_3$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$, n being as defined above,~~

~~or one of R_1 and R_2 is hydrogen and the other, together with R_3, forms a $(CH_2)_m$ bridge, m being 2 or 3, and R_4 is H, CH_3, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $^{11}CH_3$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$, and~~

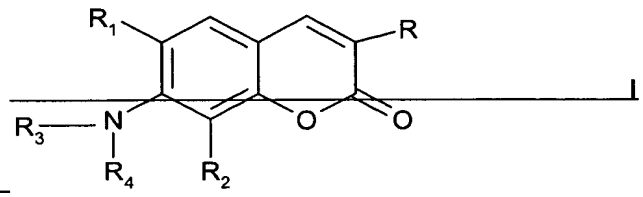
~~R is a group of formula~~



~~wherein X is O, S or NR_8, R_8 being H, CH_3, $^{11}CH_3$, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$ (n being as defined above), Y is CH or N and R_6 and R_7, independently, are H, NO_2, F, ^{18}F, $O(CH_2)_nF$, $O(CH_2)_n{}^{18}F$, Cl, CN, ^{11}CN, OCH_3, $O^{11}CH_3$, I, ^{123}I, $O(CH_2)_nI$ or $O(CH_2)_n{}^{123}I$ (n being as defined above),~~

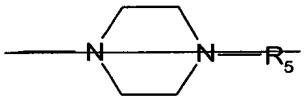
~~in free base or acid addition salt form.~~

6. (Currently amended) A method for labeling histopathological structures in vitro or in vivo, comprising contacting brain tissue with a compound as defined in claim 3 of the formula I, in free base form or in acid addition salt form.



~~wherein~~

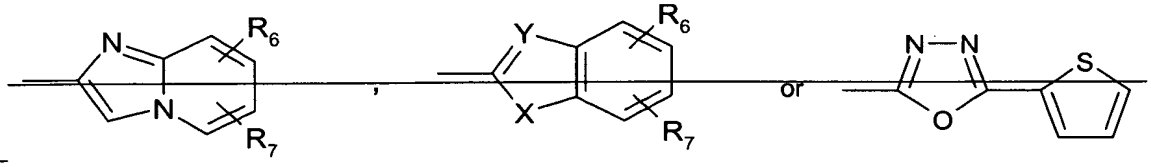
~~either R_1 and R_2 are both hydrogen and either R_3 and R_4, independently, are H, CH_3, $^{11}CH_3$, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$, n being 2, 3 or 4, or R_3 and R_4, together with the nitrogen atom to which they are attached, form a group of formula~~



~~wherein R_5 is H, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, CH_3, $^{11}CH_3$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$, n being as defined above,~~

~~or one of R_1 and R_2 is hydrogen and the other, together with R_3, forms a $(CH_2)_m$-bridge, m being 2 or 3, and R_4 is H, CH_3, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $^{11}CH_3$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$, and~~

~~R is a group of formula~~



~~wherein X is O, S or NR_8, R_8 being H, CH_3, $^{11}CH_3$, $(CH_2)_nI$, $(CH_2)_n{}^{123}I$, $(CH_2)_nOH$, $(CH_2)_nF$ or $(CH_2)_n{}^{18}F$ (n being as defined above), Y is CH or N and R_6 and R_7, independently, are H, NO_2, F, ^{18}F, $O(CH_2)_nF$, $O(CH_2)_n{}^{18}F$, Cl, CN, ^{11}CN, OCH_3, $O^{11}CH_3$, I, ^{123}I, $O(CH_2)_nI$ or $O(CH_2)_n{}^{123}I$ (n being as defined above),~~

~~in free base or acid addition salt form.~~

7. (Withdrawn) A method according to claim 6, for labeling ß-amyloid plaques and neurofibrillary tangles.

8. (Withdrawn) A method according to claim 6, comprising the further step of administering the compound of formula I to a patient.

9. (Withdrawn) A method according to claim 6, comprising the further step of determining whether the compound of formula I labeled the target structure.

10. (Withdrawn) A method according to claim 9, comprising the further step of observing the target structure labeled with a non-radioactive compound of formula I, using fluorescence microscopy.

11. (Withdrawn) A method according to claim 9, comprising the further step of observing the target structure labeled with a radioactive compound of formula I, using positron emission tomography (PET).

12. (Withdrawn) A method according to claim 9, comprising the further step of observing the target structure labeled with a radioactive compound of formula I, using single photon emission computed tomography (SPECT).

13. (Withdrawn) A method according to claim 6 for diagnosing Alzheimer's disease.

14. (Withdrawn) A method according to claim 13, for monitoring the effectiveness of a therapeutic treatment of Alzheimer's disease.

15. (Withdrawn) A method according to claim 6 for detecting histopathological hallmarks of Alzheimer's disease.

16. (Withdrawn) A method according to claim 7, comprising the further step of administering the compound of formula I to a patient.

17. (Withdrawn) A method according to claim 7, comprising the further step of determining whether the compound of formula I labeled the target structure.

18. (Withdrawn) A method according to claim 17 for diagnosing Alzheimer's disease.

19. (Withdrawn) A method according to claim 18, for monitoring the effectiveness of a therapeutic treatment of Alzheimer's disease.

20. (Withdrawn) A method according to claim 17, comprising the further step of observing the target structure labeled with a non-radioactive compound of formula I, using fluorescence microscopy.

21. (Withdrawn) A method according to claim 7 for detecting histopathological hallmarks of Alzheimer's disease.

22. (Withdrawn) A method according to claim 17, comprising the further step of observing the target structure labeled with a radioactive compound of formula I, using positron emission tomography (PET).

23. (Withdrawn) A method according to claim 22 for diagnosing Alzheimer's disease.

24. (Withdrawn) A method according to claim 23, for monitoring the effectiveness of a therapeutic treatment of Alzheimer's disease.

25. (Withdrawn) A method according to claim 17, comprising the further step of observing the target structure labeled with a radioactive compound of formula I, using single photon emission computed tomography (SPECT).

26. (Withdrawn) A method according to claim 25 for diagnosing Alzheimer's disease.

27. (Withdrawn) A method according to claim 26 for monitoring the effectiveness of a therapeutic treatment of Alzheimer's disease.

28. (Canceled)

29. (Withdrawn) A method according to claim 7 for diagnosing Alzheimer's disease.

30. (Withdrawn) A method according to claim 29 for monitoring the effectiveness of a therapeutic treatment of Alzheimer's disease.

31. (Canceled)